

EUROPEAN PATENT OFFICE

Patent Abstracts of Japan

PUBLICATION NUMBER : 09242533
PUBLICATION DATE : 16-09-97

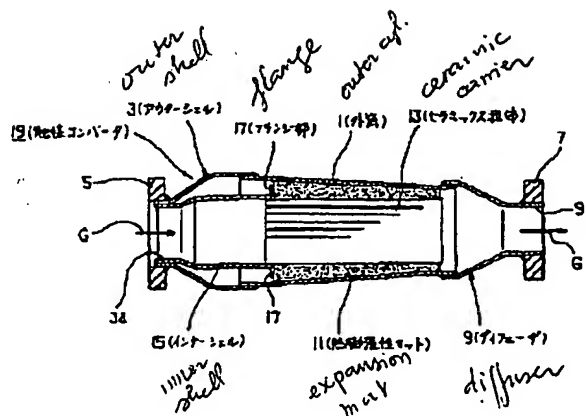
APPLICATION DATE : 01-03-96
APPLICATION NUMBER : 08044814

APPLICANT : CALSONIC CORP;

INVENTOR : TAKAHASHI YOICHI;

INT.CL. : F01N 3/28

TITLE : CATALYTIC CONVERTER



ABSTRACT : **PROBLEM TO BE SOLVED:** To provide a catalytic converter, in which a thermal expansion mat is easily pressed for charge in comparison with the conventional one and a ceramics carrier having the circular cross section or elliptical cross section can be easily inserted into an outer cylinder at the time of housing the ceramics carrier, which is formed by winding the thermal expansion mat, in the outer cylinder at the time of manufacture.

SOLUTION: This catalytic converter is formed of a taper-shaped outer cylinder 1 having a small diameter over from a front part to a rear part thereof, a ceramics carrier 13 held through a thermal expansion mat 11 pressed into the outer cylinder 1, an outer shell 3 fitted to a front part of the outer cylinder 1, an inner shell 5, of which front end is fixed to the inner circumference of a front side of the outer shell 3 and which is formed with an annular flange part 17, which abuts on the front end of the thermal expansion mat 11 so as to push it to the axial direction of the ceramics carrier 13, in the circumferential edge of a rear side thereof, and a diffuser 9 fitted to a rear part of the outer cylinder 1.

COPYRIGHT: (C) JPO

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the catalytic converter with which a car exhaust air system etc. is equipped.

[0002]

[Description of the Prior Art] Although the under floor is equipped with the catalytic converter which purifies the exhaust gas discharged from the engine in the conventional, for example, car, exhaust air system, in addition to this catalytic converter, the engine exhaust manifold is equipped with a manifold converter which is indicated by JP,5-12622,U etc. these days.

[0003] And in order to use ceramic support widely as catalyst support used for this kind of catalytic converter and to manufacture a catalytic converter conventionally using this ceramic support, after performing support processing of a precious metal catalyst to ceramic support, a thermal-expansion nature mat (INTARAMU mat) is wound around that periphery, these are contained in the half-crack container of a pair, or the approach of pressing fit in the container made from a casting using oil pressure is taken.

[0004]

[Problem(s) to be Solved by the Invention] By the way, if it was in the conventional approach which presses fit in a container the ceramic support which wound the thermal-expansion nature mat like ****, since positioning in every direction was difficult in the case of press fit, in cross-section elliptical ceramic support, the actual condition was that only the ceramic support of a cross-section circle configuration is used.

[0005] A manifold converter with a big capacity However, since [for example,] the path becomes large in the ceramic support of a cross-section circle configuration when connecting with an exhaust manifold, In attaching becoming difficult on a layout with a radiator, an engine, etc. and equipping an under floor Ceramic support of the big cross-section circle configuration of a path could not be used by relation with a ground clearance, and there was fault of being unable to equip with the catalytic converter using the ceramic support of a major diameter cross-section circle configuration on a layout with other equipments.

[0006] Moreover, if the pack density of a thermal-expansion nature mat is not enough, there is a possibility that a thermal-expansion nature mat may disperse in pulsation of exhaust gas, it may become impossible to maintain support holding power, and ceramic support may be damaged in a container by use over a long period of time on the structure of holding ceramic support on a thermal-expansion nature mat. Then, when the ceramic support which wound the thermal-expansion nature mat was conventionally pressed fit in a container, although it was high-density and was pressed fit and filled up with the thermal-expansion nature mat in the container with ceramic support, there was a fault of 1g/cc which a press fit fixture is enlarged and a press fit activity takes much time amount.

[0007] Although the pressurization to the direction of a minor axis of the ceramic support by upper shell and ROASHIERU (the vertical direction) was enough while cross-section elliptical ceramic support

could be used if it was in the approach of winding a thermal-expansion nature mat around the periphery of ceramic support, and on the other hand containing these in half-crack containers, such as upper shell of a pair, and ROASHIERU, there was a problem that the pressurization of the major-axis direction (longitudinal direction) was not enough.

[0008] While this invention was thought out in view of this actual condition, and it compares with the former in holding the ceramic support which wound the thermal-expansion nature mat at the time of manufacture in an outer case (container) and being able to perform press fit of a thermal-expansion nature mat, and restoration easily, it aims at offering easily the catalytic converter which can be inserted in an outer case for cross-section elliptical ceramic support as well as the ceramic support of a cross-section circle configuration.

[0009]

[Means for Solving the Problem] In order to attain this purpose, the catalytic converter concerning claim 1 The thermal-expansion nature mat with which it pressed fit and filled up in the outer case of a taper configuration with which a posterior part is covered from anterior part, and aperture turns into a minor diameter one by one, and the outer case is minded. While it is equipped on the ceramic support held in the outer case concerned, the outer shell which clings to the anterior part of the above-mentioned outer case, and the above-mentioned ceramic support and the same axle and the front side edge section fixes to before [outer shell] side inner circumference It is characterized by consisting of an inner shell in which the annular flange which presses this to the shaft orientations of ceramic support at the backside periphery section in contact with the before [the above-mentioned thermal-expansion nature mat] side edge section was formed, and a diffuser which clings to the posterior part of the above-mentioned outer case.

[0010] (Operation) According to the catalytic converter concerning claim 1, the inner shell which carried out thermal expansion will pressurize a thermal-expansion nature mat with the inflow of exhaust gas at shaft orientations, and the fall of the pack density of the thermal-expansion nature mat by the thermal expansion of an outer case will be prevented, and it will be prevented that the inner shell concerned shows directly exhaust gas to ceramic support, and exhaust gas hits the before [a thermal-expansion nature mat] side edge section.

[0011] And therefore, it will compare with the former that it can insert easily in an outer case even if ceramic support is [in / since, as for the catalytic converter concerning claim 1, the outer case is fabricated by the shape of a taper / manufacture] cross-section elliptical, and an outer case is fabricated by the shape of a taper, and ** should press only a thermal-expansion nature mat fit, a thermal-expansion nature mat will be pressed fit in an outer case by the small force, and it will fill up.

[0012]

[Embodiment of the Invention] Hereafter, the operation gestalt of this invention is explained to a detail based on a drawing. It is the outer case made from a cross-section elliptical metal (for example, stainless steel) fabricated in the shape of [from which drawing 1 shows 1 operation gestalt of the catalytic converter concerning claim 1, 1 covers / anterior part / a posterior part in drawing, and aperture turns into a minor diameter one by one] a taper. The diffuser 9 of a taper configuration with which joining of the rear flange 7 was carried out for the abbreviation bowl-shaped outer shell 3 by which joining of the front flange 5 was carried out to emission inlet-port 3a at the anterior part periphery to emission outlet 9a again at the posterior part periphery of an outer case 1 is welded on an outer case 1 and the same axle, respectively.

[0013] And in the outer case 1, the cross-section elliptical ceramic support 13 by which the thermal-expansion nature mat 11 was wound around the periphery is held, a predetermined consistency is pressed fit and filled up with the thermal-expansion nature mat 11, and it has structure which held the ceramic support 13 on an outer case 1 and the same axle. Moreover, 15 are the inner shell with which it was equipped in the outer shell 5 among drawing, it is equipped with the inner shell 15 concerned on the ceramic support 13 and the same axle, and the front side edge section is welded to the inner circumference of emission inlet-port 3a of the outer shell 3. And an inner shell 15 is installed to the before [the ceramic support 13] side edge section, and the before [the ceramic support 13] side edge

section is loosely inserted in the back end side. Moreover, the annular flange 17 which carries out a pressure welding to the before [the thermal-expansion nature mat 11] side edge section is formed in the backside [an inner shell 15] periphery section, and the consistency is held by the thrust according [the thermal-expansion nature mat 11 filled up with the predetermined consistency in the outer case 1] to this inner shell 15.

[0014] And since the inner shell 15 which compares with the outer shell 5 and is exposed to exhaust gas G has a large thermal expansion, if exhaust gas G flows through an inner shell 15, the inner shell 15 which carried out thermal expansion to the shaft orientations will pressurize the thermal-expansion nature mat 11, and will prevent the fall of the pack density of the thermal-expansion nature mat 11 by the thermal expansion of an outer case 1.

[0015] The catalytic converter 19 concerning this operation gestalt is constituted in this way, and this catalytic converter 19 is manufactured by the approach like a less or equal. In holding the ceramic support 13 which supported the catalyst in an outer case 1, wind around the periphery of the ceramic support 13 first the thermal-expansion nature mat 11 fabricated to band-like, but As shown in drawing 2, in the longitudinal direction edges 11a and 11b of the thermal-expansion nature mat 11 The bypass of exhaust gas G from between Edges 11a and 11b is prevented by the convex piece 21 of a stop and the concave engagement section 23 being formed, respectively, in order to prevent the bypass of exhaust gas G, and winding the thermal-expansion nature mat 11 around the periphery of the ceramic support 13, and stopping these.

[0016] And after winding the thermal-expansion nature mat 11 around the ceramic support 13 at Mr. **, these are inserted into an outer case 1 from the anterior part of an outer case 1. In addition, when the ceramic support 13 is inserted in Mr. ** into an outer case 1, the thermal-expansion nature mat 11 is fabricated with predetermined thickness so that the ceramic support 13 may not fall out from the posterior part of an outer case 1, but the thickness is set up so that trouble may not be caused to insertion of the ceramic support 13 from outer case 1 anterior part.

[0017] Subsequently, the before [an inner shell 15] side edge section is inserted from the inside of the outer shell 3, the before [the ceramic support 13] side edge section is loosely inserted in the back end side of an inner shell 15, and ** et al. and the outer shell 3 are welded to emission inlet-port 3a of the outer shell 3 which welded the front flange 5 in the predetermined location of the anterior part periphery of an outer case 1. Then, an inner shell 15 is pushed in with predetermined oil pressure using the pressure fixture inserted from emission inlet-port 3a, the pressurization of an inner shell 15 is stopped in the place where the thermal-expansion nature mat 11 became a predetermined consistency, and the before [an inner shell 15] side edge section is welded to the inner circumference of emission inlet-port 3a of the outer shell 3 in this condition.

[0018] And the catalytic converter 19 which finally welds the diffuser 9 which welded the rear flange 7 to the predetermined location of the posterior part periphery of an outer case 1, and is applied to this operation gestalt will be manufactured, and purification of exhaust gas will be attained by equipping a car exhaust air system with this. And the inner shell 15 which carried out thermal expansion pressurizes the thermal-expansion nature mat 11 with the inflow of exhaust gas G to a catalytic converter 19 at shaft orientations, and the fall of the pack density of the thermal-expansion nature mat 11 by the thermal expansion of an outer case 1 is prevented, and it prevents that the inner shell 15 concerned shows directly the ceramic support 13 to exhaust gas G, and exhaust gas G hits the before [the thermal-expansion nature mat 11] side edge section.

[0019] Therefore, according to this operation gestalt, while being able to prevent the fall of the pack density of the thermal-expansion nature mat 11 by the thermal expansion of an outer case 1, it is possible to prevent yellow JUN (wind erosion) of the thermal-expansion nature mat 11. Moreover, since this operation gestalt is pressurized by the inner shell 15 so that the thermal-expansion nature mat 11 may become predetermined pack density after it inserts the ceramic support 13 which wound the thermal-expansion nature mat 11 into the outer case 1 fabricated in the shape of a taper Compare with the conventional pressure method, in manufacture, even if the ceramic support 13 is cross-section elliptical, can insert easily into an outer case 1, and in the conventional pressure method The clearance

between ceramic support and a container. For example, in order to press fit the ceramic support which wound the thermal-expansion nature mat which has the thickness of 5mm in the place which is 3mm with a thermal-expansion nature mat, Although the frictional force between containers also acted, and the activity took time amount, and the press fit fixture was also enlarged and the big oil pressure force was needed. According to this operation gestalt, an outer case 1 is fabricated in the shape of a taper, in order that ** may also press only the thermal-expansion nature mat 11 fit, it would be compared with the former, press fit of the thermal-expansion nature mat 11 and restoration of it will be attained by the small force, and its workability will improve remarkably.

[0020] In addition, with the above-mentioned operation gestalt, it is also possible to apply this invention to the catalytic converter using the outer case and ceramic support of a cross-section circle configuration, although cross-section elliptical an outer case 1 and the ceramic support 13 were used, and although the outer case 1 and the diffuser 9 were used as another object, these may really be fabricated in the above-mentioned operation gestalt.

[0021]

[Effect of the Invention] As stated above, while being able to prevent the fall of the pack density of the thermal-expansion nature mat by the thermal expansion of an outer case according to the catalytic converter concerning claim 1, it is possible to prevent yellow JUN of a thermal-expansion nature mat.

[0022] Moreover, since the outer case is fabricated in the shape of a taper, the catalytic converter concerning claim 1 is compared with the former in manufacture, in order that it can be easily inserted into an outer case even if ceramic support is cross-section elliptical, and it may press only a thermal-expansion nature mat fit, compared with the former, press fit of a thermal-expansion nature mat and restoration of it will be attained by the small force, and its workability will improve remarkably.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] The outer case of a taper configuration with which a posterior part is covered from anterior part, and aperture turns into a minor diameter one by one (1), The thermal-expansion nature mat (11) with which it pressed fit and filled up in the outer case (1) is minded. The outer shell which clings to the ceramic support (13) held in the outer case (1) concerned, and the anterior part of the above-mentioned outer case (1) (3), While it is equipped on the above-mentioned ceramic support (13) and the same axle and the front side edge section fixes to before [outer shell (3)] side inner circumference The inner shell in which the annular flange (17) which presses this to the shaft orientations of ceramic support (13) at the backside periphery section in contact with the before [the above-mentioned thermal-expansion nature mat (11)] side edge section was formed (15), the diffuser (9) which clings to the posterior part of the above-mentioned outer case (1) -- since -- the catalytic converter characterized by becoming.

[Translation done.]